CLAIMS

We claim:

1.   A method in a station of a wireless network, the method comprising:

wirelessly receiving data via each of a plurality of antennas, the data corresponding to a packet of information transmitted from a remote station;

sampling the received data corresponding to the received packet to form data samples;

determining a measure of signal quality from samples of the received data for each of the antennas; and

selecting one of the plurality of receive antennas as the antenna for receiving from the remote station, the selecting according to the determined measure of signal quality.

2.   A method as recited in claim 1, wherein the determining of the measure of signal quality is prior to carrying out automatic gain control (AGC) for the data corresponding to the packet.

3.   A method as recited in claim 1, wherein the determining of the measure of signal quality is after to carrying out automatic gain control (AGC) for each of the antennas for the data corresponding to the packet.

4.   A method as recited in claim 2, wherein the determining of the measure of signal quality includes determining a measure of the relative EVM from samples of the received data corresponding to part of the packet.

5.   A method as recited in claim 4, wherein the packet conforms to one of the OFDM variants of the IEEE 802.11 standard or a derivative thereof, such that the packet includes a preamble that includes a short symbol part that has a sequence of short symbols, and wherein the measure of the relative EVM is from samples of the short symbol part of the preamble.

6.   A method as recited in claim 5, wherein determining the measure of the relative EVM includes determining a measure that varies monotonically with the symbol vector magnitude (SVM) in the short symbol part.

7.   A method as recited in claim 6, wherein determining a measure that varies monotonically with the symbol vector magnitude (SVM) includes performing a discrete Fourier transform on samples corresponding to a short symbol.

8.   A method as recited in claim 6, wherein determining the measure of the relative EVM assumes that the noise power per subcarrier in the short symbol part is the same for each subcarrier and for each antenna, such that determining the measure of the relative EVM does not require determining of a measure that varies monotonically with the noise power per subcarrier.

9.   A method as recited in claim 6, wherein determining the measure of the relative EVM further includes determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part.

10.   A method as recited in claim 9, wherein determining a measure that varies monotonically with the noise power per subcarrier is carried out for signals received via only one of the antennas.

11.   A method as recited in claim 9, wherein determining a measure that varies monotonically with the noise power per subcarrier is carried out for signals received via each of the antennas.

12.   A method as recited in claim 9, wherein determining a measure that varies monotonically with the noise power per subcarrier includes performing a discrete Fourier transform on samples corresponding noise.

13.   A method as recited in claim 9, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining a measure of the average signal power prior to a packet arriving.

14.   A method as recited in claim 9, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes

determining the noise power prior to AGC, the signal power prior to AGC, and assuming an upper limit on the post-AGC signal to noise ratio (SNR).

15. A method as recited in claim 4, wherein the plurality of antennas are further usable for transmitting, the method further including:

selecting the same antenna for transmitting to the remote station as the selecting step selects as the antenna for receiving from the remote station.

16. A method as recited in claim 4, wherein the selecting uses at least one additional criterion for selecting the antenna for receiving from the remote station.

17. A method as recited in claim 16, wherein the at least one additional criterion includes the carrier to noise ratio.

18. An apparatus for inclusion in a station of a wireless network, the apparatus comprising:

a plurality of antennas;

a selector to select one of the plurality of antennas;

a radio receiver coupled to one of the plurality of antennas via the selector, the receiver to wirelessly receive data corresponding to a packet of information transmitted from a remote station, the receiver including an analog-to-digital converter producing data samples of signals received at the station from the remote station corresponding to the packet;

a signal quality calculator coupled to the receiver to determine a measure of the received signal quality from samples of the received data from the remote station; and

an antenna controller coupled to the signal quality calculator and to the selector to select one of the antennas as the antenna for receiving from the remote station according to the calculated signal quality.

19.   An apparatus as recited in claim 18, wherein the signal quality calculator determines the measure of signal quality prior to automatic gain control (AGC) for the data corresponding to the packet.

20.   An apparatus as recited in claim 19, wherein the determining of the measure of signal quality by the signal quality calculator includes determining a measure of the relative EVM from samples of the received data corresponding to part of the packet.

21.   An apparatus as recited in claim 20, wherein the packet conforms to one of the OFDM variants of the IEEE 802.11 standard or a derivative thereof, such that the packet includes a preamble that includes a short symbol part that has a sequence of short symbols, and wherein the measure of the relative EVM is from samples of the short symbol part of the preamble.

22.   An apparatus as recited in claim 21, wherein the determining of the measure of signal quality by the signal quality calculator includes determining a measure that varies monotonically with the symbol vector magnitude (SVM) in the short symbol part.

23.   An apparatus as recited in claim 22, wherein determining the measure of the relative EVM assumes that the noise power per subcarrier in the short symbol part is the same for each subcarrier and for each antenna, such that determining the measure of the relative EVM does not require determining of a measure that varies monotonically with the noise power per subcarrier.

24.   An apparatus as recited in claim 22, wherein determining the measure of the relative EVM further includes determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part.

25.   An apparatus as recited in claim 24, wherein determining a measure that varies monotonically with the noise power per subcarrier is carried out for signals received via only one of the antennas.

26.   An apparatus as recited in claim 24, wherein determining a measure that varies monotonically with the noise power per subcarrier is carried out for signals received via each of the antennas.

27. An apparatus as recited in claim 24, wherein determining a measure that varies monotonically with the noise power per subcarrier includes performing a discrete Fourier transform on samples corresponding noise.

28. An apparatus as recited in claim 24, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining a measure of the average signal power prior to a packet arriving.

29. An apparatus as recited in claim 24, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining the noise power prior to AGC, the signal power prior to AGC, and assuming an upper limit on the post-AGC signal to noise ratio (SNR).

30. An apparatus as recited in claim 24, wherein the determining of a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining a measure of the average signal power prior to a packet arriving.

31. An apparatus as recited in claim 24, wherein the determining of a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining noise power prior to AGC, the signal power prior to AGC, and assuming an upper limit on the post-AGC signal to noise ratio (SNR).

32. An apparatus as recited in claim 22, wherein the determining of a measure that varies monotonically with the symbol vector magnitude (SVM) includes performing a discrete Fourier transform on samples corresponding to a short symbol.

33. An apparatus in a station of a wireless network, the apparatus comprising:

means for wirelessly receiving data via each of a plurality of antennas, the data corresponding to a packet of information transmitted from a remote station;

means for sampling the received data corresponding to the received packet to form data samples;

means for determining a measure of signal quality from samples of the received data for each of the antennas; and

means for selecting one of the plurality of receive antennas as the antenna for receiving from the remote station, the selecting according to the determined measure of signal quality.

34.   An apparatus as recited in claim 33, wherein the determining of the measure of signal quality is prior to carrying out automatic gain control (AGC) for the data corresponding to the packet.

35.   An apparatus as recited in claim 34, wherein the determining of the measure of signal quality includes determining a measure of the relative EVM from samples of the received data corresponding to part of the packet.

36.   An apparatus as recited in claim 35, wherein the packet conforms to one of the OFDM variants of the IEEE 802.11 standard or a derivative thereof, such that the packet includes a preamble that includes a short symbol part that has a sequence of short symbols, and wherein the measure of the relative EVM is from samples of the short symbol part of the preamble.

37.   An apparatus as recited in claim 36, wherein determining the measure of the relative EVM includes determining a measure that varies monotonically with the symbol vector magnitude (SVM) in the short symbol part.

38.   An apparatus as recited in claim 37, wherein determining the measure of the relative EVM assumes that the noise power per subcarrier in the short symbol part is the same for each subcarrier and for each antenna, such that determining the measure of the relative EVM does not require determining of a measure that varies monotonically with the noise power per subcarrier.

39.   An apparatus as recited in claim 37, wherein determining the measure of the relative EVM further includes determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part.

40.   An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier is carried out for signals received via only one of the antennas.

41. An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier is carried out for signals received via each of the antennas.

42. An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier includes performing a discrete Fourier transform on samples corresponding noise.

43. An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining a measure of the average signal power prior to a packet arriving.

44. An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining the noise power prior to AGC, the signal power prior to AGC, and assuming an upper limit on the post-AGC signal to noise ratio (SNR).

45. An apparatus as recited in claim 37, wherein determining a measure that varies monotonically with the symbol vector magnitude (SVM) includes performing a discrete Fourier transform on samples corresponding to a short symbol.

46. An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining a measure of the average signal power prior to a packet arriving.

47. An apparatus as recited in claim 39, wherein determining a measure that varies monotonically with the noise power per subcarrier in the short symbol part includes determining noise power prior to AGC, the signal power prior to AGC, and assuming an upper limit on the post-AGC signal to noise ratio (SNR).

48. An apparatus as recited in claim 35, wherein the plurality of antennas are further usable for transmitting, the apparatus further including:

    means for selecting one of the antennas for transmitting by selecting the same antenna for transmitting to the remote station as was selected as the antenna for receiving from the remote station.

49. An apparatus as recited in claim 35, wherein the selecting uses at least one additional criterion for selecting the antenna for receiving from the remote station.

50. An apparatus as recited in claim 49, wherein the at least one additional criterion includes the carrier to noise ratio.